

## **ABSTRACT**

A method for manufacturing a semiconductor device comprising of the steps of creating an oxide layer on a first surface of an epitaxial layer having damage layer located at a predetermined depth from the first surface, the damaged layer being in parallel alignment with the first surface. Then, using the oxide layer as a masked, etch the epitaxial layer to create a plurality of pillars, the plurality of pillars being enclosed in a first area of the top surface of the epitaxial layer, the first area having a predefined perimeter and the plurality of pillars being separated from each other by inner trenches and from the perimeter by a perimeter trench, the inner trenches and perimeter trench extend from the first surface to at least the predetermined depth of damaged layer. Form an oxide layer that coats the pillars, fills the perimeter trench and coats the sides and bottoms of the inner trenches prior to removing the oxide layer from at least the sidewalls and bottom of the inner trenches. Then etch with an etchant that etches preferentially the damaged layer, and grow a layer of silicon dioxide to replace the damaged layer.